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Prolonged Second Stage of Labor and Levator Ani Muscle Injuries

Vajihe Marsoosi[1], Ashraf Jamal[2], Laleh Eslamian[2], Sonia Oveisi[3] & Shokohossadat Abotorabi[4]

[1] Perinatology Division, Department of Obstetrics and Gynecology, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

[2] Department of Obstetrics and Gynecology, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

[3] Metabolic Diseases Research Center, Medical School, Qazvin University of Medical Sciences, Qazvin, Iran

[4] Department of Obstetrics and Gynecology, Faculty of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran

Correspondence: Shokohossadat Abotorabi, Assistant Professor of Perinatology, Department of Obstetrics and Gynecology, Faculty of Medicine, Shahid Bahonar Blvd., PO Box 34197/59811, Qazvin, Iran. Tel: 98-283-333-6001. E-mail: shabotorabi@qums.ac.ir

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Abstract

Objective: To determine the effect of pregnancy and vaginal delivery on the pelvic floor and levatorani morphology and function.

Methods: Design. Cross-sectional study. Setting. Tertiary care teaching hospital. Population. 75 primigravid women were recruited for assessment at 6 weeks postpartum compared with 25 nulliparous women. Hiatal morphology and levator ani muscle avulsion were assessed by 4-dimensional translabial ultrasound examination. The volume achievement obtained by ultrasound was performed in supine position with empty bladder at rest, on maximum Valsalva maneuver, and on maximum pelvic floor muscle contraction. Main Outcome Measures. Hiatal diameter and area were measured at the plane of minimal hiatal dimension as defined in the midsagittal plane and Levator avulsion was assessed.

Results: There were significant differences in hiatal area morphology at rest, on Valsalva maneuver and during contraction of muscles among the study groups, but there was no difference in pelvic diameter at rest, on Valsalva maneuver, and during contraction. There were 21 cases of puborectalis avulsion (42%) with no significant difference between non-progressive labor (8 cases) and Normal Vaginal Delivery (NVD) (13 cases) groups.

Conclusions: The results of the present study showed that non-progressive labor is the main risk factor for pelvic muscle injuries, indicating the necessity of a better management and timely cesareans in women with prolonged second stage of labor.

Keywords: ultrasound, labor, puborectalis avulsion, levator ani, pelvic floor

1. Introduction

Pelvic floor is a general expression that includes all the muscles, connective tissues, and other structures located in the pelvic cavity; a network of muscles with crucial role in maintaining and securing an appropriate functioning of the organs located in the pelvis. Normal Vaginal delivery (NVD) is a major predisposing factor for the development of vaginal and pelvic floor disorder such as genital prolapse and urinary or anal incontinence. The stretch of levator ani muscle throughout delivery causes hiatal opening during movement of the fetus (Cassadó Garriga et al., 2011).

The rupture of levator ani muscle is especially presented in puborectalis muscle. An irreversible change occurs following the vaginal delivery which can cause levator ani dysfunction (Cassadó Garriga et al., 2011). The development of urinary incontinence after delivery may mostly be due to broad damage or denervation of the pelvic floor (Leeuw, Vierhout, Struijk, & Hop, 2001).

Levator ani and puborectalis are the major contributors of levator hiatus which has an important and central role